

**Lead in Drinking Water Work Group
Kentucky Engineering Center, 160 Democrat Drive
June 15, 2016**

Draft Agenda

1. Call Meeting to Order and Roll Call of Membership
2. Introduce Guests
3. Approve Minutes of May 18, 2016
4. Hand out copy of Ground Rules and Open Meetings Rules
5. Presentation on Water Treatment, Corrosion Control Sub-group – Dr. Rengao Song
6. Review Sub-groups Assignments and Schedule
7. Open Discussion for Workgroup
8. Public Comment Period
9. Next Workgroup Meeting, 1:30 PM - July 20, 2016



Commonwealth of Kentucky
Energy and Environment Cabinet

Matthew G. Bevin, Governor

Charles G. Snively, Secretary

SPECIAL MEETING NOTICE

Contact: Lanny Brannock, 502-564-2150
Lanny.brannock@ky.gov

Lead in Drinking Water Workgroup to Meet on June 15, 2016

FRANKFORT, Ky. (June 10, 2016) - The Lead in Drinking Water workgroup will meet June 15 at 1:00 p.m. EST at the Kentucky Engineering Center 160 Democrat Drive, Frankfort, KY 40601.

The meeting is open to the public. This is a special meeting of the Lead in Drinking Water Group held in accordance with Kentucky Revised Statute 61.823

Agenda:

1. Call Meeting to Order and Roll Call of Membership
2. Introduce Guests
3. Approve Minutes of meeting May 18, 2016
4. Hand out copy of Ground Rules and Open Meetings Rules
5. Presentation on Water Treatment, Corrosion Control Sub-group – Dr. Rengao Song
6. Review Sub-groups Assignments and Schedule
7. Set a regular meeting schedule
8. Open Discussion for Workgroup
8. Public Comment Period
9. Next Workgroup Meeting, 1:30 PM - July 15, 2016

LEAD IN DRINKING WATER WORK GROUP
 Kentucky Engineering Center, 160 Democrat Drive
 June 15, 2016

WORK GROUP MEMBER SIGN-IN SHEET

<u>Name</u>	<u>Agency/Organization</u>	<u>Email Address</u>	<u>Phone number</u>
<u>Don Lovan</u>	<u>UKY WATER DIST.</u>	<u>RLovan@ukwater.org</u>	<u>859-441-5087</u>
<u>Samantha Kaiser</u>	<u>KY DOW</u>	<u>Samantha.Kaiser@ky.gov</u>	<u>502-782-6995</u>
<u>Kyle Fasham</u>	<u>Ky Dow</u>	<u>kfr.fasham@ky.gov</u>	<u>502-782-6954</u>
<u>Kay Samborn</u>	<u>KY/TN ANWA</u>	<u>executivedirector@ktnawwa.org</u>	<u>502-550-2992</u>
<u>Obe D. Cox</u>	<u>CARROLL CO. WATER</u>	<u>ocox@carrollcountyywater.com</u>	<u>502-347-9500</u>
<u>Brian Thomas</u>	<u>City of Marion Water</u>	<u>bthomas@marionky.gov</u>	<u>270-704-0023</u>
<u>Greg Fitzgibbon</u>	<u>Blue Water Ky</u>	<u>gfitz@bluewaterky.com</u>	<u>502-533-5073</u>
<u>Justin Sensabaugh</u>	<u>KY American Water</u>	<u>justin.sensabaugh@amwater.com</u>	<u>859-455-6743</u>
<u>GARY LAEMORE</u>	<u>Ky Rural Water Assn</u>	<u>G.Laemore@KRWAA.org</u>	<u>270.843.2291</u>
<u>Mike Gardner</u>	<u>Big Muni. WHI.</u>	<u>wgardner@bigmuni.com</u>	<u>270-782-4366</u>
<u>BILL ROBERTSON</u>	<u>PADUCAH WATER</u>	<u>brobertson@pwwky.com</u>	<u>270-444-5550</u>
<u>Tom GABBARD</u>	<u>KY DOW</u>	<u>Tom.gabbard@ky.gov</u>	<u>502-782-6952</u>
<u>Pengao Song</u>	<u>Louisville Water</u>	<u>RSong@lvcky.com</u>	<u>502-569-0880</u>

[illegible]

**Drinking Water Advisory Council
Lead in Drinking Water (LIDW) Work Group
Draft Meeting Minutes
May 18, 2016**

In attendance: Jennifer Burt (DPH), Obe Cox (CCW), Tom Gabbard (DOW), Mike Gardner (BGMU), Ron Lovan (NKYW), Brad Montgomery (ACEC), Bill Robertson (PWWKY), Thomas Rockaway (UofL), Kay Sanborn (KYTN-AWWA), Rengao Song (LWC), Brian Thomas (MWD)
Absent: Greg Heitzman, Chair (BWK), Gary Larimore (KRWA)

Division of Water (DOW): Peter Goodmann, Director; Carole Catalfo, Sarah Gaddis, Shawn Hokanson, Todd Ritter

Dept. of Environmental Protection (DEP): Larry Taylor

Liaison and Public Attendees – Amber Agee (DPH), Lane Boldman (KCC), Kent Chandler (KY OAG), Annette Dupont Ewing (KMUA), Michael Flynn (Winchester Municipal), Julie Roney (FPB)

The meeting began at 1:35 p.m.

Call Meeting to Order and Roll Call of Membership

Chair Greg Heitzman had an urgent personal issue at the last moment, and asked Peter T. Goodmann to lead the meeting. Peter Goodmann briefly discussed the upcoming Cabinet move to the new building at 300 Sower Blvd., and that the next meeting may be held at an alternate location. Work group members introduced themselves.

Introduce Guests

Guests introduced themselves and were reminded to sign in.

Approve Minutes of April 20, 2016

The work group approved the April Meeting Minutes by consensus.

Approve Ground Rules and Open Meeting Rules

The work group reviewed draft ground rules. The following changes are needed:

Title: Change "Draft Ground Rules" to "Ground Rules and Open Meeting Rules"

1.f. Change "Environmental Protection Cabinet" to "Energy and Environment Cabinet" or "EEC"

1.g. Add "and Kentucky Open Records Act" after "Freedom of Information Act (FOIA)"

1.k. Add "Commissioner, Department of Environmental Protection" after "Bruce Scott", and change "Environmental Protection Cabinet" to "Energy and Environment Cabinet (EEC)"

4. Remove extra parentheses from after "presenters"

4d. and 5. Change font to match remainder of document

Peter Goodmann noted the absence of proxies, which the Chair has discouraged in order to keep the workgroup at a manageable size. If gathering a quorum or voting becomes an issue in the future, the workgroup can change the position on proxies.

Motion to Approve Draft Ground Rules with the above changes made by Bill Robinson. Motion seconded by Brad Montgomery. Motion carried.

Presentation on EPA Lead and Copper Rule Compliance in Kentucky

The presentation began with an overview of the Division of Water organizational chart. Peter Goodmann addressed challenges with personnel, available resources, and water. He stated that the EPA would be issuing a health advisory for perflourinated chemicals (PFCs) in drinking water, particularly perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), and that his inclination is to educate the public. The group briefly discussed risk communications with constituencies.

Tom Gabbard, Assist. Director of the Division of Water, continued the presentation with discussions regarding infrastructure, resilience, sustainability, capacity development, health impacts, the Lead and Copper Rule, and Kentucky public water system compliance data.

The work group discussed action levels versus sampling frequency/density and sampling by special request. The Division of Water encourages peer-to-peer collaboration, proactive approaches to correcting issues, and offers assistance for compliance. The work group also addressed difficulties with the definition and determination of what constitutes an "inventory", and infrastructure versus corrosion control.

The issue of lead service line replacement was raised by a guest. The group discussed service line ownership to the curb versus the meter, and the competing interests of Public Service Commission regulation and individual property rights. Though only about 6% of homes have lead lines, they tend to be in low income neighborhoods with few resources for replacement; noted that Louisville Water Company offers stipends from its Foundation for those purposes. All agreed that lead service line replacement, which is often a simple connection piece between the home and water main, is an enormous undertaking with few funding resources.

The work group also discussed the impetus that the crisis in Flint created with legislators, and the need to educate the public and elected officials about corrosion control versus lead service line replacement, and the complexity of water chemistry.

Review Subgroup Assignments and Schedule

Peter Goodmann reminded the Subgroup leaders of their responsibility to initiate conversations and prepare for scheduled presentations.

Review Report Template

The work group reviewed the "Kentucky Lead Report Focus Area – Public Health & Lead" template and no changes were made.

Adjournment

The meeting adjourned at 3:35 p.m.

**Kentucky Lead Workgroup
Ground Rules and Open Meeting Rules
Approved May 18, 2016**

1. Workgroup Governance:

- a. The Kentucky Lead Workgroup consists of 12 appointed members.
- b. The Chair will run the meetings. In the absence of the Chair, the Chair shall appoint an individual to Chair the meeting.
- c. A quorum is established by attendance in person by at least 7 members. In the absence of a quorum, the group may meet to discuss and communicate, but no decisions or recommendations of the Workgroup will be considered.
- d. Workgroup members may conference and communicate in meetings by phone, but will not be able to vote by phone.
- e. Meeting notice, draft agenda and draft minutes will be delivered to group members at last 2 business days in advance of the meeting.
- f. Public meeting notice will be made by Energy and Environment Cabinet (EEC) at least 24 hours in advance of meetings.
- g. Workgroup meetings will be open and accessible to the public and Workgroup meeting materials are subject to the Freedom of Information Act (FOIA) and Kentucky Open Records Act.
- h. Minutes of the Workgroup meetings will be kept and made available to the public after approval.
- i. The Workgroup may establish sub-groups for the purpose of gathering information and educating workgroup members; Subject matter experts or other resources may be identified by the Workgroup to assist with sub-group activities; sub-group meetings of less than a quorum will not be subject to open meetings requirements.
- j. Copies of all printed materials presented at the Workgroup meetings will be made available to the public at the meetings.
- k. All communications to and from the media will be directed to Bruce Scott, Commissioner, Department of Environmental Protection, Energy and Environment Cabinet (EEC) or to the the Workgroup Chair, Greg Heitzman.

2. Workgroup members will:

- a. Make effort to attend majority of meetings.
- b. Let the Chair know at least 24 hours in advance if he/she can not attend the meeting.
- c. Come prepared to meetings, listen attentively and not have side conversations.
- d. Actively participate and respect the input of others during meetings.
- e. Actively work towards consensus for the benefit of public health and safety.
- f. Be assigned to one or more sub-committees.
- g. Silence their phones during the meetings, and excuse themselves from the meeting if they must make or take a phone call.

3. Decision making and recommendations of the workgroup:

- a. The minutes and agenda will be reviewed and approved at the beginning of each Workgroup meeting.
- b. Chair will work to gain consensus of all Workgroup members for recommendations and action items.
- c. Decisions and final recommendations of the Workgroup must be approved by a simple majority of Workgroup members in attendance at the meetings.
- d. Decisions, recommendations and action items will be recorded in the minutes.

4. Workgroup Attendees (guests, media, liaison, resources, presenters):

- a. Workgroup attendees must silence their phones during the meetings, and excuse themselves from the meeting if they must make or take a phone call.
- b. Each meeting will have a public comment period where attendees may address the workgroup.
- c. Each attendee will be provided up to 5 minutes to address the group, and the time may be extended at the discretion of the Chair.
- d. The Chair may call for input from liaisons, resources or presenters during the course of the meeting.

5. Workgroup Ground Rules may be amended by a majority vote of the Workgroup members in attendance at any meeting of the Workgroup.

Lead Corrosion & Control

Rengao Song, Bill Robertson,
Brad Montgomery, and Justin Sensabaugh



Acknowledgement

Richard Brown, Michael Schock, & LWC Staff

Water Lead/LSLs Correlated to Blood Lead: Europe

- Lead in water > 5 ppb significantly increased blood lead ($p > 0.001$) in young women, and intervention excluding tap water a few months dropped blood lead 37% (Fertmann et al., 2004)
- Children in France (6 months-6 years) had 50% higher blood lead if they consumed tap water and had an LSL, and the 95%ile blood lead level for this group was increased by 256% (Etchevers et al., 2014)

Presentation Outline

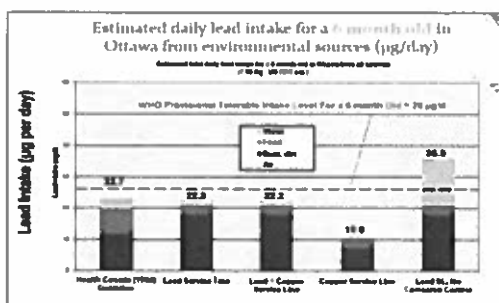
- Background
- Corrosion chemistry in drinking water
- Corrosion control methods
- Bench-top corrosion research tools
- Long-Term LCR Revisions and impacts
- Take home messages
- LCR monitoring case study -LWC

Historical Corrosion Management

- Iron corrosion
 - Prevent Tuberculation
 - Prevent pipe loss
 - Prevent red water
- Controlled by
 - Ferric oxides & calcium carbonate films at pH >8
 - Polyphosphate addition –NOT orthophosphate



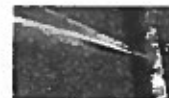
Daily Lead Intake: Water vs Other Sources



Drinking water normally is not a major source of lead exposure. It can be a significant source under the condition of lead service line with no corrosion control.

Historical Corrosion Management

- Copper corrosion
 - Prevent pitting corrosion
 - Prevent uniform (general) corrosion
- Controlled by
 - Prevent microbiological growth
 - Maintaining low DIC/high pH
 - Allowing time for films to form
 - Orthophosphate – ongoing treatment but must be maintained



Lead Sources from Water Service Connections

Typical Water Service Line

Customer Service Line

Property Line

Unexcavated Water Main

Excavated Water Main

— Distribution Responsibility

— Municipal Water Utility Responsibility

S. HANSEN & SONS WATER

Leadville Water Services 2009

Abrasion

- Physical disturbances
 - Meter installation/replacement or damaged
 - Service line repair or partial replacement
 - External shut-off valve repair/replacement
 - Street excavation or construction near the house
 - Any part of home plumbing system disturbance
- Hydraulic factors
 - Significant flow changes
 - Flow reversals
 - Pressure transients

Lead in Drinking Water

The diagram illustrates the pathways of lead in drinking water, showing the flow between four main components:

- Metal Source (pipe, fittings, etc.)**
- Dissolved in Water**
- Scale (deposits on plumbing)**
- Particulate in Water**

The processes are categorized as follows:

- Electrochemical Processes (Solid Line):**
 - From Metal Source to Dissolved in Water (Corrosion)
 - From Dissolved in Water to Scale (Precipitation)
 - From Scale to Dissolved in Water (Dissolution)
 - From Dissolved in Water to Particulate in Water (Desorption)
- Physical Processes (Dashed Line):**
 - From Metal Source to Particulate in Water (Abrasion)
 - From Scale to Particulate in Water (Dislodgement)
 - From Particulate in Water to Dissolved in Water (Dissolution)
 - From Particulate in Water to Scale (Precipitation)
 - From Particulate in Water to Metal Source (Insignificant)

Legend:

- Electrochemical Processes
- - - Physical Processes

Corrosion Basics

- Corrosion in drinking water: An electrochemical interaction between metal surface and water, resulting in metal release into water
 - Reduction @ Cathode: $2e^- + 1/2O_2 + H_2O \rightleftharpoons 2OH^-$
 - Oxidation @ Anode: $Me \rightleftharpoons 2e^- + Me^{2+}$
- Types of corrosion
 - General or uniform
 - Non-uniform: galvanic, pitting, microbial
- Complex processes
 - Pipe material and plumbing practice
 - Water quality factors (pH, DIC, ORP, PO_4^{3-} , Cl and SO_4^{2-} ...)
 - Hydraulic conditions

Water with Dissolved Lead and Lead Particulate

Pipe Flow

Pipe Wall

Particulate Material

Dissolved Lead

Flow Water

Loose Lead & Iron Particulate

Lead Eh-pH Diagram in Water
(DIC=18 mg/L & Pb=0.010 mg/L)

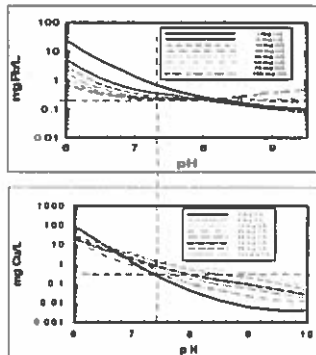
The diagram plots Eh (volts) on the y-axis (from -1.0 to 1.2) against pH on the x-axis (from 0 to 14). The stability fields are defined by the following boundaries:

- Pb metal** (bottom left region)
- PbCO₃** (middle left region)
- Pb(OH)₂** (middle right region)
- PbO₂ (plattnerite)** (top right region)
- Pb(OH)₃⁻** (bottom right region)

Annotations on the diagram:

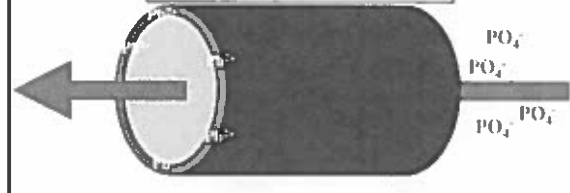
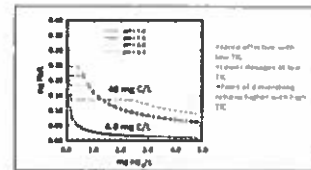
- Drop in Eh at surface from treatment change, i.e., nitrification, etc.** (indicated by a downward arrow from Eh ≈ 0.4 to Eh ≈ 0.2 at pH ≈ 3.5).
- Drop in ORP from treatment change or DO oxidant demand** (indicated by a downward arrow from Eh ≈ 0.8 to Eh ≈ 0.6 at pH ≈ 8.5).

Impact of pH and DIC on Pb and Cu



- Higher pH better for both
- Optimal DIC for Pb depends on pH
- Lower DIC better for Cu at all pH > ~7.2 and for Pb at pH > ~8.2

Orthophosphate Application

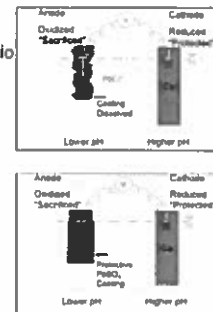


How to Minimize Corrosion

- pH/alkalinity/DIC
 - High pH and low DIC
- Orthophosphate (PO_4)
 - Best at pH 7.2 to 7.8
 - Issues: microbial? wastewater P?
- Form insoluble Pb(IV) scale
 - High oxidation state, e.g., via maintenance of free chlorine residual
- Cl/SO4 Ratio
 - Higher chloride-to-sulfate mass ratio (CSMR) tends to increase lead release under the conditions of galvanic corrosion
 - $CSMR < 0.5$

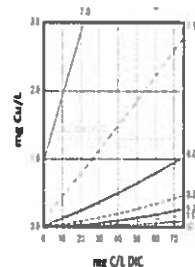
Effect of CSMR

- Higher chloride-to-sulfate mass ratio (CSMR) tends to increase lead release under the conditions of galvanic corrosion
- A threshold CSMR of 0.5 was reported: Significant lead leaching may occur when $CSMR > 0.5$



pH Adjustment

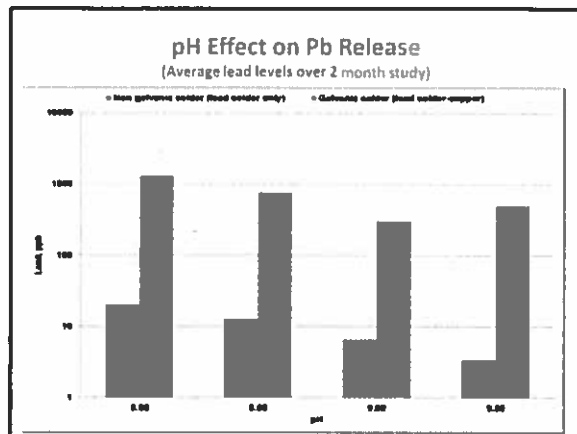
- Pb and Cu release generally decreases with pH increase from solubility point of view under most conditions. Raise pH in 0.3 unit increments towards 9-9.5 is recommended by EPA as a Pb control strategy if current pH is >7.8 and DIC >5 mg C/L
- pH adjustment may not always work when
 - pH not high enough throughout DS and need buffering (water blending, nitrification, CO2 exchange in tanks)
 - Dissimilar material on pipe surface or other corrosion mechanisms



Bench Scale Research Tools

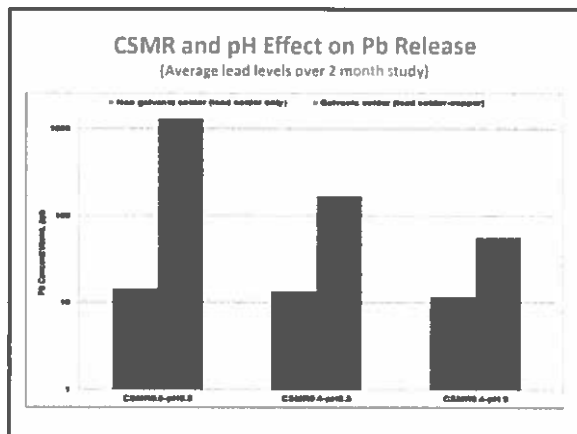
- Two Types of coupons can be used
 - Non-galvanic solder (NGS) coupon - 50:50 Pb:Sn solder, 1" / 1/8" (L/D), epoxied to the bottom of a 120 mL glass jar
 - Galvanic solder (GS) coupon - 50:50 Pb:Sn solder placed inside copper coupling (right picture)
 - 50:50 Pb:Sn solder - 1" / 1/2" (L/D)
 - Cu coupling - 1.2" / 5/8" (L/D)





Long-Term LCR

- Long-Term LCR (LT-LCR)
 - Scheduled to be proposed by USEPA sometime in 2013 2014 2015 2017?
 - Likely promulgated two years later
 - May include
 - Revisions to sampling
 - New or re-emphasized OCCT
 - PLSLR and other LSL issues
 - AL?

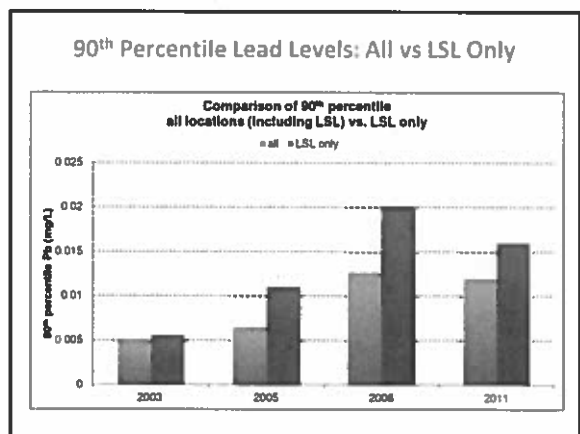


LTLCR – Potential Impact of Revisions

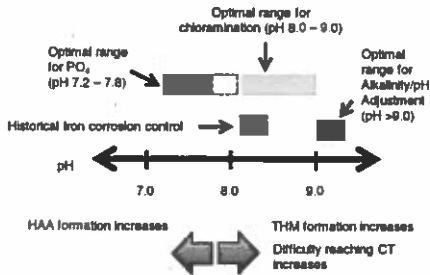
- Some systems currently in compliance need to
 - Re-assess current OCCT
 - Change OCCT
- Change LSL replacement activities
- Repeat OCCT studies (pipe loops)
- Separate Cu and Pb
- Only or More LSLs as Tier 1 sites
- Change sampling protocol
- Lower AL
 - More WQP
 - More sites
 - Higher frequency
 - Use control charts
- Public Education

Lead and Copper Rule (LCR)

- Promulgated 1991
- Sample “first flush” in selected homes with great likelihood of high Pb levels (LSLs or Pb solder)
- Number of locations depends on system size
- Action Level (AL)
 - 0.015 mg/L for Pb, 1.3 mg/L for Cu
 - Exceedance of is NOT an MCL violation, but can trigger other actions (TT)
 - Optimized Corrosion Control Treatment (OCCT)
 - Water quality parameter (WQP) monitoring
 - public education, and
 - lead service line replacement (LSLR)
- 2000 & 2007
 - Minor revisions – rule framework basically unchanged



Balancing Multiple Regulations: DBP Example



LCR-Year Monitoring Case Study

- Develop strategy to improve site representativeness and sample integrity – *Noise Reduction*
- Establish team involving all key departments
- Historical data review
- Identify factors that may inadvertently alter sample representativeness – *False Signal*
- Irregular/abnormal distribution and/or residential disturbances
- Customer performs the sampling

Take Home Messages

- Personal involvement from top management
- A WQ team from across the company
- A WQ surveillance team with internal and external customers
- Be proactive: SCs (character, comprehensiveness, communication, commitment, and creativity)
- Define WQ signal from noise
- Review historical data to calculate 90th percentile using only LSL locations
- Profile (ten 1L samples) at selected homes
- Investigate high velocity flushing after LSL replacement
- If close to AL or ~8 ppb, look at Pb control alternatives (PO4)

LCR-Year Monitoring Case Study

3C's Required For Success:
Communication + Commitment + Collaboration

Quarter	LCR Tasks
Q1	<ul style="list-style-type: none"> ➢ Form team with support from executive leadership ➢ Establish communications with team members & state regulators ➢ Initiate surveying of LCR sample sites
Q2	<ul style="list-style-type: none"> ➢ Collect field & residential information to finalize sample list ➢ Verbal & written communications with customers ➢ Upload all LCR sample sites into GoSync mapping tool for field users ➢ Begin sample collection: coordinate delivery & pick-ups of samples
Q3	<ul style="list-style-type: none"> ➢ Continue sample collections through September ➢ Laboratory analysis and reporting ➢ Customer result notifications
Q4	<ul style="list-style-type: none"> ➢ Calculate 90th percentiles, finalize all reporting

Take Home Message

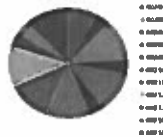
- Three levels of WQ Issues (Result-code)
 - System-wide: treatment plant related (water source or and/or source WQ changes, treatment changes/loss of treatment control, unstable water leaving the plant(s))
 - Area-wide/Zip code: distribution tanks/reservoirs, major water-main breaks, downstream low demand, nitrification, etc.
 - Individual customers: low water use homes may perpetually have high lead; stagnation can affect protective scales within LSLs; LSL disturbances happen daily
- Distribution water quality management
 - Customers drink tap water not finished water in clear wells
 - Water quality can change as it travel from the plant to customer taps: pH drop, nitrification, bio-chemical reactions

Timeline	LCR Tasks
Q1 - Q4	<ul style="list-style-type: none"> ➢ Establish quarterly meetings (Engineering, Water Quality, Plant Operations, Public Relations, Transportation Logistics, etc.) ➢ Establish communication with EYDOW: identify regulator overseeing LCR ➢ Use various data records to generate initial list of LSL locations (usually representative of entire DS) ➢ Field verify LSL by visual confirmation in the field ➢ Provide initial list of LSL locations that could be registered on LCR sites ➢ Set up billing credit with customers for participation ➢ Monitor bi-weekly WQ at treatment plant
Q1 - Q4	<ul style="list-style-type: none"> ➢ Quarterly meeting ➢ Receive inquiry for residential information ➢ Gather field information in proximity to LCR sites locations ➢ Finalize LCR sampling locations ➢ Verbal communications with selected customers (2 weeks prior to collection) ➢ Upload all potential site locations into GoSync Mapping ➢ Prepare for laboratory analysis (extract or in house): receive supplies, calibration, etc. ➢ Review customer sampling procedures ➢ Monitor bi-weekly WQ at treatment plant ➢ Collect WQ DS samples 2 weeks apart
Q1 - Q4	<ul style="list-style-type: none"> ➢ Quarterly meeting ➢ Monitor bi-weekly WQ at treatment plant ➢ Send 1st 8-month WQ data to EYDOW ➢ Communicate with customer to coordinate delivery & pick-up ➢ Confirm tap record activity within sampling zone ➢ Map updates (bi-weekly) update active sites, remove sites as samples are collected ➢ Deliver final information file with sampling instructions to selected sites ➢ Collect minimum of 50 samples (total in 10 LSLs x 50 LSL) ➢ Register new sites with EYDOW ➢ Laboratory analysis & reporting ➢ Customer result notifications (provide within 10 days of receiving result) ➢ Carry result notification to the EYDOW no later than 3 months following the end of the monitoring period (12/30 of each year)
Q1 - Q4	<ul style="list-style-type: none"> ➢ Quarterly meeting ➢ Monitor bi-weekly WQ at treatment plant ➢ Send Lead and Copper results (due 90th % sheet) to EYDOW by October 15th ➢ Collect WQ DS samples 2 weeks apart ➢ Send 2nd 8-month WQ data to EYDOW

Sample Sites Selection

- Spatial representation of wide DS
- Field verification of LSL
- Identify significant DS impacts in proximity of sample site within a 3 month period prior to collection
- Gather residential information: shut offs, water usage, contact information
- Customer communications: verbal commitment to participate, details about residence, schedule sample collection
- Offer \$20 billing credit as incentive

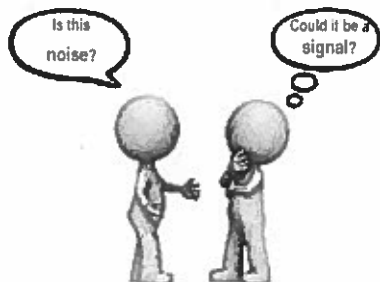
2014 LSL sampling distribution



41 000000
 41 000000
 41 000000
 41 000000
 41 000000
 41 000000
 41 000000
 41 000000
 41 000000
 41 000000

Customer Incentives Sponsored by Water System (credit card, credit on water bill, other incentive)

■ none ■ \$10 ■ \$20 ■ \$25 ■ \$50 ■ \$100



Workgroup Members		Organization	Representing		
Greg Heitzman - Chair	BlueWater Kentucky	Water Industry	Gheitzman@bluewaterky.com		
Jennifer Burt	KY Public Health	Public Health	JenniferA.Burt@ky.gov		
Obe Cox	Carroll County Water	Medium Systems	ocox@carrollcountywvater.com		
Tom Gabbard	KY EEC	KY DOW	Tom.Gabbard@ky.gov		
Mike Gardiner	Bowling Green Municipal Utilities	KMUA/Medium Systems	mgardner@bgmu.com		
Ron Lovan	Northern KY Water District	Large Systems	RLovan@nkywater.org		
Brad Montgomery	GRW Engineers	ACEC/Engineering	BMontgomery@grwinc.com		
Bill Robertson	Paducah Water	Large Systems	brobertson@pwwv.com		
Tom Rockaway	U of L Engineering	Academic	rockaway@louisville.edu		
Justin Sensabaugh	Kentucky American	Private Systems	Justin.sensabaugh@amwater.com		
Rengao Song	Louisville Water	Large Systems	rsong@lwcky.com		
Brian Thomas	Marion Water Department	Small Systems	bthomas@marionky.gov		
Liasons:					
Gary Larimore	Ky Rural Water		g.larimore@krwa.org		
Kay Sanborn	KY AWWA		executivedirector@kynawwa.org		
Peter Goodmann	KY EEC		Peter.Goodmann@ky.gov		
Bruce Scott	KY EEC		Bruce.Scott@ky.gov		
Recorder:					
Samantha Kaiser	KY EEC		Samantha.Kaiser@ky.gov		
Sub-Group (up to 5 members)	Report Out	Sub-Group Lead	Member 2	Member 3	Member 4
Public Health	April	Jennifer Burt	Tom Rockaway	Greg Heitzman	
Regulatory/Legislative	May	Tom Gabbard	Ron Lovan	Justin Sensabaugh	Obe Cox
Treatment/Corrosion Control	June	Rengao Song	Brad Montgomery	Bill Robertson	Justin Sensabaugh
Distribution/Piping	July	Bill Robertson	Tom Rockaway	Mike Gardiner	Rengao Song
Training	August	Brian Thomas	Tom Gabbard	Greg Heitzman	
Finance	September	Mike Gardiner	Ron Lovan	Greg Heitzman	
Early Warning/Monitoring	October	Rengao Song	Jennifer Burt	Greg Heitzman	
Communication/Education	November	Greg Heitzman	Ron Lovan	Brad Montgomery	Obe Cox
			Resource 1		
			Resource 2		
			Tom Fitzgerald		
			Matt Rhodes (JC Health Dept)		
			Kay Sanborn (KyAWWA)		
			Gary Larimore (KRW)		
			Matt Rhodes (JC Health Dept)		
			Kelley Dearing Smith (LWC)		